

REMARKS

This application has been reviewed in light of the Office Action dated October 8, 2002. Claims 20-29 are pending in this application, with Claims 20, 23, 25, and 28 in independent form. Claims 1-19 have been cancelled, without prejudice or disclaimer of the subject matter presented therein. Claims 20-29 have been added to better define the present invention and thereby distinguish the claimed invention over the art of record. Favorable reconsideration is requested.

The Office Action includes an objection to the drawings based on Figures 1-3 not being labeled "Prior Art," and the "R" in the bottom right corner of Figure 2A not being circled. Applicants submit herewith a Letter Transmitting Corrected Drawings making these changes and respectfully request withdrawal of the objection.

Claims 4-6 were objected to under 37 C.F.R. § 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. In particular, Claims 4-6 allegedly claimed that the horizontal selection means be disposed as part of the output means, wherein Claims 1-3, which Claims 4-6 depended upon, allegedly claimed the horizontal selection means. Cancellation of Claims 4-6 renders this objection moot. Applicants have taken care to ensure that the new dependent claims properly depend from the independent claims and respectfully request withdrawal of the objection.

Claims 7-9 were rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to make and/or use the invention. In particular, Claims 7-9 referred to a "time delay" that the Examiner stated was not disclosed in the specification. Claims 7-9 have been cancelled, and the new claims do not include any reference to a time

delay. Accordingly, Applicants respectfully request withdrawal of the Section 112, first paragraph rejection.

Claims 1-9 and 16 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. In particular, the Examiner stated that the claimed vertical and horizontal direction selection means gave rise to two possible interpretations. One interpretation being that the vertical and horizontal direction selection means defines the size of a basic block, wherein the size of the basic block could be from 2 vertical pixels to an entire pixel array. The other interpretation being that the vertical and horizontal direction selection means selects a predefined basic block. Cancellation of these claims renders this rejection moot, but Applicants note that newly added independent Claim 20 recites “a vertical-direction selecting circuit which selects, in common, photodetectors arranged in the horizontal direction on a plurality of horizontal lines basis, from among the photodetectors arranged two-dimensionally,” and “a horizontal-direction selecting circuit which selects, in common, photodetectors arranged in the vertical direction on a plurality of vertical lines basis from among the photodetectors arranged two-dimensionally.” Applicants believe that this language complies with Section 112, second paragraph and respectfully request withdrawal of the rejection.

Claims 1-6 and 10-12 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,322,752 (Bixby). Claims 13-15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bixby, and Claims 7-9 and 16 were rejected under Section 103(a) as being unpatentable over Bixby in view of U.S. Patent No. 5,771,031 (Kinoshita et al.). Claims 17-19 were rejected under Section 103(a) as being

unpatentable over Bixby, in view of Kinoshita et al., and further in view of U.S. Patent No. 6,230,975 (Colley et al.). Cancellation of Claims 1-19 renders these rejections moot.

However, Applicants submit that newly added independent Claims 20, 23, 25, and 28, together with the remaining dependent claims, are patentably distinct from the cited prior art at least for the following reasons.

Claim 20 requires an image pickup element including a pixel area, a vertical-direction selecting circuit, a horizontal-direction selecting circuit, and a plurality of output lines. The pixel area includes a plurality of partial pixel-areas, wherein the plurality of partial pixel-areas are arranged two-dimensionally in horizontal and vertical directions, and wherein each of the plurality of partial pixel-areas include photodetectors arranged two-dimensionally in the horizontal and vertical directions. The vertical-direction selecting circuit selects, in common, photodetectors arranged in the horizontal direction on a plurality of horizontal lines basis from among the photodetectors arranged two-dimensionally. The horizontal-direction selecting circuit selects, in common, photodetectors arranged in the vertical direction on a plurality of vertical lines basis from among the photodetectors arranged two-dimensionally. The plurality of output lines output, in parallel, signals from the photodetectors selected by the vertical-direction selecting circuit and the horizontal-direction selecting circuit. Also, the vertical-direction selecting circuit and the horizontal-direction selecting circuit are controlled so that the plurality of output lines output the signals of the selected photodetectors on a partial pixel-area basis.

Important features of Claim 20 are that the vertical-direction selecting circuit selects, in common, photodetectors arranged in the horizontal direction on a plurality of horizontal lines basis, the horizontal-direction selecting circuit selects, in common, photodetectors arranged in the vertical direction on a plurality of vertical lines basis, and the plurality of output lines output, in parallel, the signals of the selected photodetectors on a partial pixel-area basis. Applicants note that a partial pixel-area includes in its definition a block of pixels. Support for these features can be found in the specification at least at page 14, line 15, to page 15, line 25, which is described in reference to Figure 11. This portion of the specification states, in part, that

the vertical direction read-out block selection circuit 302 activates only lines of selected blocks . . . the horizontal direction read-out block selection circuit 303 activates only lines of selected blocks When the vertical direction read-out block selection circuit 302 and horizontal direction read-out block selection circuit 303 are simultaneously operated, the detection signal from an arbitrary basic block can be output from the output terminal.

In other words, the invention is capable of outputting all photodetector signals of an entire block simultaneously. As an illustration, Figure 11 shows four blocks. A first block consists of photodetectors RA1, GA2, GA3, and BA4; a second block consists of RB1, GB2, GB3, and BB4; a third block consists of RE1, GE2, GE3, and BE4; and a fourth block consists of RF1, GF2, GF3, and BF4 . If the first block described above is selected by both the vertical direction read-out block selection circuit 302 and the horizontal direction read-out block selection circuit 303, the output of all four photodetectors RA1, GA2, GA3, and BA4, making up the first block, are coupled to the output lines 107 in parallel via the transfer switch 304. (It is to be understood, of course, that the scope of Claim 20 is not limited to the details of this embodiment, which is referred to only for purposes of illustration.)

As a disclosure of the outputting of blocks in parallel, the Examiner refers to Bixby. However, column 4, lines 28-36 of Bixby, relied upon by the Examiner at page 4 of the Office Action, states that “the sensor 40 is read as though divided into blocks. As depicted in FIG. 4, the sensor 40 is formatted into six blocks (1 through 6) of 32 photosite rows each. To begin readout, a block select electronic circuit in the form of a shift register 42 enables all 32 rows of block 1 for readout. Column address electronics, in the form of a column shift register 44, then sequentially addresses the photosite columns of the entire area image sensor 40.” (emphasis added).

As stated by this passage, Applicants understand Bixby to disclose selecting all of the rows of a block, and then sequentially selecting and reading out the columns of the block one at a time, i.e., the rows of the block are selected and output in parallel, but the columns of the block are selected and output one at a time. In contrast, the present invention selects and outputs both the rows and columns of the block in parallel, i.e., not just the rows in parallel and the columns one at a time. Therefore, Applicants submit that nothing in Bixby would teach or suggest the vertical-direction selecting circuit that selects, in common, photodetectors arranged in the horizontal direction on a plurality of horizontal lines basis, the horizontal-direction selecting circuit that selects, in common, photodetectors arranged in the vertical direction on a plurality of vertical lines basis, and the plurality of output lines which output, in parallel, the signals of the selected photodetectors on a partial pixel-area basis, as recited in Claim 20.

Kinoshita et al. was relied upon in the Office Action to disclose “a block drive technique by which each horizontal pixel array is divided into N pixel blocks (where N is an integer of two or more).” (Page 7 of the Office Action). Even if Kinoshita et al.

were deemed to teach or suggest this feature, Applicants submit that nothing in Kinoshita et al. would teach or suggest the vertical-direction selecting circuit that selects, in common, photodetectors arranged in the horizontal direction on a plurality of horizontal lines basis, the horizontal-direction selecting circuit that selects, in common, photodetectors arranged in the vertical direction on a plurality of vertical lines basis, and the plurality of output lines which output, in parallel, the signals of the selected photodetectors on a partial pixel-area basis, as recited in Claim 20.

Colley et al. was relied upon in the Office Action to disclose “a single-chip CMOS optical reader.” (Page 8 of the Office Action). Even if Colley et al. were deemed to teach or suggest this feature, Applicants submit that nothing in Colley et al. would teach or suggest the vertical-direction selecting circuit that selects, in common, photodetectors arranged in the horizontal direction on a plurality of horizontal lines basis, the horizontal-direction selecting circuit that selects, in common, photodetectors arranged in the vertical direction on a plurality of vertical lines basis, and the plurality of output lines which output, in parallel, the signals of the selected photodetectors on a partial pixel-area basis, as recited in Claim 20.

Applicants submit that, at least for the reasons discussed above, any proposed combinations of Bixby, Kinoshita et al., and Colley et al., assuming such combinations would even be permissible, would still fail to teach or suggest the the vertical-direction selecting circuit, the horizontal-direction selecting circuit, and the plurality of output lines, as recited in Claim 20. Accordingly, Applicants submit that Claim 20 is patentable over this prior art, taken separately or in any proper combination.

Independent Claims 23, 25, and 28 require a plurality of output lines which output, in parallel, signals from said at least two photo-detection elements of the block. Similar to the discussion above regarding Claim 20, these claims also require that all of the signals of the block be output in parallel. Accordingly, Claims 23, 25, and 28 are believed to be patentable for at least the same reasons as discussed above in connection with Claim 20.

The other rejected claims in this application depend from one or another of the independent claims discussed above, and, therefore, are submitted to be patentable for at least the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, individual consideration of the patentability of each claim on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and the allowance of the present application.

Applicants' undersigned attorney may be reached in our New York Office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address listed below.

Respectfully submitted,



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